

STUDIES IN THE THEACEAE XVIII
THE WEST INDIAN SPECIES OF LAPLACEA

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THE GENUS *Laplacea* was named by Humboldt, Bonpland and Kunth (1822) in honor of Marquis de [Pierre Simon] Laplace (1749–1827), a French mathematician and astronomer of the first order, and probably the ranking man of his time in these fields. Born the son of a small farmer in Beaumont-en-Auge in Normandy on March 28, 1749, Laplace owed his education to the interest shown in him by wealthy landowners. In 1767 he left Beaumont, where he had been teaching mathematics, and accepted the post of Professor of Mathematics at École Militaire in Paris. His *Mécanique céleste* (5 vols., 1799–1825) is considered today a monument of mathematical genius. His complete works were published by the French government in seven volumes (1843–47), and as late as 1912 a second edition containing additional matter was published.

A year earlier (1821) two other genera, *Wikstroemia* and *Lindleya*, were described by Schrader and Nees von Esenbeck respectively. These were named in honor of Dr. J. E. Wikström and the English botanist John Lindley (1799–1865).

A fourth name, *Haemocharis*, was very casually introduced by Salisbury in 1806 and taken up by Martius and Zuccarini in 1826.

Of the four names mentioned for the genus, *Laplacea* and *Haemocharis* received the greatest recognition. Considerable controversy, of a mild nature, resulted among adherents of all four generic names, but *Laplacea* and *Haemocharis* appealed most to the students of botany. Such workers as Humboldt, Bonpland and Kunth, DeCandolle, Sprengel, Cambessedes, Spach, Endlicher, G. Don, Walpers, Wawra, Melchior, Schmidt, and Lemée favored *Laplacea*, while Martius and Zuccarini, Choisy, Baillon, Kuntze, Szyszyłowicz, and Urban employed the name *Haemocharis*. Later Rehder pointed out that *Laplacea* appeared to be recognized by the majority of workers and suggested its retention as a *nomen conservandum*, and as such it appeared in Kew Bull. 1940: 112. 1940.

Blake (Contrib. Gray Herb. 53: 39. 1918) made a belated plea for *Wikstroemia*, the earliest name applied to the genus. He gave an excellent and very accurate review of the history of the genus. However, the name *Wikstroemia* could not be used, since it had already been placed on the list of *nomina conservanda* in 1905 as applying to a genus in a different family, the Thymelaeaceae.

Korthals, in 1842, described the genus *Closaschima*, which has since been reduced to synonymy under *Laplacea*. The study of the Asiatic material will not be included in this review but will be taken up later under a series of Asiatic studies.

The present study of the American species of *Laplacea* has been divided into two parts, the first including the West Indian species and the second those of South and Central America. This paper deals only with the West Indian species.

Of two species only, namely, *Laplacea haematoxylon* (Sw.) D. Don and *L. portoricensis* (Klug & Urban) Dyer, could one feel that material ample for complete and satisfactory study had been accumulated in the American herbaria. Of all the others the material is very sparse, in several instances the species having been collected only once or twice. Frequently great difficulty was experienced in preparing accounts of some earlier inadequately described species. In the genus as a whole the flowers are fairly large and conspicuous. Hence, often only a single flower was included with the collected specimen, and many times this single flower was incomplete. In such cases dissections of boiled material could not be made with a clear conscience, and it was necessary to employ great caution in working with the material so as not to ruin it for study by future workers.

As far as the West Indian species are concerned, no species have been reduced to synonymy in this study. In the province of Oriente, Cuba, five species and one variety are recognized. Oddly enough, the variety (new) has the most collected specimens. In the case of all the entities included here, very little material other than the original type was available for study. It is obvious that all are very closely related, and it is possible that future collections may prove that only two or perhaps three true species are represented. The same is true for the three species from Haiti.

An attempt has been made to bring together all the species of the genus, giving as complete descriptions as possible and supplying the synonymy and literature in each case. Brief discussions showing relationships between species and the outstanding characteristics helpful in identification have also been supplied.

The following abbreviations are used to designate the herbaria cited in this paper: A=Arnold Arboretum; Ch=Chicago Natural History Museum; G=Gray Herbarium; Mo=Missouri Botanical Garden; NY=New York Botanical Garden; and US=United States National Herbarium.

Laplacea Humboldt, Bonpland & Kunth, Nov. Gen. Sp. 5: 161 (207, ed. folio), t. 461. 1822. — DeCandolle, Prodr. 1: 527. 1824. — Sprengel, Syst. Veg. 2: 631. 1825. — Cambessedes in St. Hilaire, Fl. Bras. Merid. 1: 299. 1827. — Spach, Hist. Nat. Veg. 4: 76. 1835. — Endlicher, Gen. Pl. 1020. 1840. — G. Don, Gen. Syst. 1: 569. 1840. — Walpers, Repert. Bot. Syst. 1: 372. 1842; 2: 801. 1843; 7: 367. 1868. — Bentham & Hooker, Gen. Pl. 1: 186. 1862. — Wawra in Martius, Fl. Bras. 12(1): 287. 1886. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 135. 1925. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 14. 1931. — Lemée, Dict. Pl. Phan. 3: 947. 1931. — Sprague et al. in Kew Bull. 1940: 112. 1940. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 69. 1944. — Kobuski in Jour. Arnold Arb. 28: 435. 1947.

Wikstroemia Schrader in Götting. Gel. Anzeig. 1821(71): 710. May 5, 1821. — Pontin [Editor] in Vet. Akad. Handl. Stockholm 1821: 168. 1821, obs. in footnote. — Blake in Contrib. Gray Herb. n. s. 53: 36. 1918. — Urban, Fl. Ind. Occ. 8: 759. 1921.

Lindleya Nees in Flora 4: 299. May 21, 1821; op. cit. 328 (as syn. of *Wikstroemia*). June 7, 1821.

Haemocharis R. A. Salisbury, Paradisus Lond. 1: sub t. 56. 1806. — Martius & Zuccarini, Nov. Gen. Sp. 1: 106. 1826. — Choisy in Mém. Soc. Phys. Hist. Nat. Genève 1: 142 (Mém. Ternstr. 57). 1855. — Baillon, Hist. Pl. 4: 253. 1873. — O. Kuntze, Rev. Gen. Pl. 1: 62. 1891. — Szyszyłowicz in Nat. Pflanzenfam. III. 6: 185. 1893. — Urban in Bot. Jahrb. 21: 545. 1896.

Closaschima Korthals, Verh. Nat. Gesch. Bot. ed. Temminck 139, t. 28. 1842.

Trees or shrubs. Leaves coriaceous, subcoriaceous or membranaceous, alternate, rarely asymmetrical, usually rounded or obtuse at the apex, often emarginate, tapering at the base into a short petiole, the margins denticulate or crenulate, rarely entire. Flowers solitary in the axils of the upper branches; bracteoles 2 (or more), sepaloid, arranged along the peduncle, quickly caducous; sepals 5 (rarely more), thick-coriaceous, unequal, graduating in size and shape from bracteoles to petals, usually appressed-pubescent on the dorsal surface, deciduous or persistent; petals 5, rarely more, unequal, usually membranaceous, usually emarginate at the apex and occasionally pubescent on the dorsal surface, the outer petal often resembling the inner sepal; stamens many, seriate, the filaments adnate to the base of the petals, the anthers versatile; ovary basically 5-celled, occasionally 4-celled, rarely 6–10-celled, sericeous, the ovules 4 or more in each cell; the styles usually 5, occasionally 3 or 6, rarely 1, the stigmas usually the same in number as the styles, 5 when the style is solitary. Fruit an elongate, more or less woody, loculicidal capsule with persistent columella; seeds flat or compressed, drawn out into an oblong, membranaceous wing.

TYPE SPECIES: *Laplacea speciosa* HBK.

Urban, in one of his earlier works, in Bot. Jahrb. 21: 545–549. 1896, designated the flowers of *Laplacea* (under *Haemocharis*) as monoecious, and in all six of the species recorded (*L. Wrightii*, *L. Curtyana*, *L. haematoxylon*, *L. villosa*, *L. alpestris* and *L. portoricensis*) he carefully described both staminate and pistillate flowers. In this paper no reference has been made to monoecious flowers in either the generic or specific descriptions because no flowers were examined that were not hermaphroditic, according to my interpretation. If, in my study of the South and Central American species, I find material producing monoecious flowers, I will revise my generic description accordingly. It is interesting to note that in describing *L. cymatoneura* at a later date (1925), Urban made no mention of monoecious flowers. O. C. Schmidt reviewed the West Indian species of the genus *Laplacea* in 1931 and described *L. Samuelssonii* without designating staminate or pistillate flowers. Also in describing *L. Urbani* in 1925

Schmidt intimated that the flowers were hermaphroditic. Marie-Victorin (1944), who described the latest species (*L. moaensis*) attributed to the genus, found only hermaphroditic flowers.

As in most other genera of the Theaceae, the terminal leaf-bud in *Laplacea* appears to be the true criterion of pubescence. In some species the mature leaves may often appear glabrous, yet an examination of the leaf-bud will show that originally the leaves were appressed-pubescent, pilose or even villous. The only truly glabrous species in the West Indies is *L. Wrightii*.

The texture of the leaf is often very difficult to determine in the dried state. Seldom does one find a species with thin membranaceous leaves. The texture is such that when dried the leaf appears subcoriaceous, at least, even though the collector may have signified the texture to be membranaceous.

The apex of the leaf is usually obtuse or rounded, often retuse or emarginate. The base is usually long tapering, often very finely decurrent into a rather short petiole, which may appear longer on casual observation because of the deceptive decurrent base.

The margins are usually finely denticulate, often with a minute point at the end of the denticulation which is easily and often broken off. More rare are crenulate or entire margins.

The bracteoles, two or more in number, are as a rule quickly caducous. These may be distributed along the pedicel or close to the calyx. They are sepaloid in appearance and grade into the sepals. Like the sepals, they are usually subligneous and pubescent on the dorsal surface. The sepals themselves grade from the bracteoles into the outer petals. The inner sepals tend to have a more membranaceous margin and occasionally it is difficult to distinguish between the inner sepal and the outer petal. The inner petals are considerably larger than the sepals, white in color, thinner in texture, and usually deeply emarginate at the apex. Occasionally one may find the outer petal to be entire and narrower at the apex. Pubescence on the dorsal surface of the petals is common but to a lesser degree than is found on the sepals.

The stamens of the various species are quite similar, differing mostly in the length of the filament and the number of series. The ovary, always sericeous, offers little variation. The accepted number of cells is five, but occasionally there are four. *Laplacea portoricensis* is an extreme exception, having six to ten cells in the ovary.

The style offers considerable variation. In most species the styles number five with an individual stigma on each style. In *L. Samuelssonii* the styles number three, while in *L. benitoensis* the styles are joined in a single entire style which is topped by five stigmas. Usually the styles are erect. Exceptions are found in *L. alpestris* and *L. cymatoneura*, where the styles are horizontal and the stigmas considerably enlarged.

The capsule offers little variation. In most species the number of valves, corresponding with the number of cells in the ovary, is five. In *L. porto-*

ricensis the valves number six to ten. The surface of the capsule is usually appressed-pubescent or glabrescent, never, as far as I know, sericeous. The length of the capsule is usually more than two centimeters. In *L. alpestris* and *L. cymatoneura* the capsule measures approximately one centimeter.

KEY TO THE SPECIES

- A. Terminal leaf-bud pubescent.
 - B. Ovary and fruit 4–5-celled.
 - C. Styles horizontal, the stigmas flattened and considerably dilated.
 - D. Leaves 1–1.5 cm. wide, long-pilose beneath; petals lightly pubescent on the dorsal surface. (Haiti). 1. *L. alpestris*.
 - DD. Leaves 2–2.5 cm. wide, glabrous beneath; petals glabrous on the dorsal surface. (Haiti; Dominican Republic)...
.....2. *L. cymatoneura*.
 - C. Styles erect, the stigmas not flattened and dilated as above.
 - D. Leaves linear-lanceolate or oblong-elliptic, acute at the apex, about five times longer than broad. (Cuba).....
.....4. *L. angustifolia*.
 - DD. Leaves obtuse or rounded at the apex, not linear-lanceolate or oblong-elliptic, seldom more than three times longer than broad.
 - E. Style entire, topped by several stigmas. (Cuba)....
.....6. *L. benitoensis*.
 - EE. Styles free to the base.
 - F. Styles 3 in number, ca. 0.6 mm. long. (Haiti)
.....3. *L. Samuelssonii*.
 - FF. Styles 5 in number, usually ca. 1 cm. long.
 - G. Leaf-margin crenate-undulate; upper pair of veins arching, first upward and out toward the margin, then back toward the midrib, appearing to join near the point of a deep emargination, forming a heart-shaped figure. (Cuba).....7. *L. Urbani*.
 - GG. Leaf-margin entire, denticulate or denticulate-crenulate; upper pair of veins not as above.
 - H. Petals 8–10 mm. long, approximately equaling the calyx-lobes in length; leaf-margin denticulate-crenulate along the upper half of one side of the margin, the other side entire; leaves often oblique. (Cuba).....8. *L. moaensis*.
 - HH. Petals 15–30 mm. long, always greatly exceeding the calyx-lobes; leaf-margins entire or denticulate along both sides; leaves symmetrical.
 - I. Leaf-margin entire; the under surface villous when young and clearly showing the original folds of the leaf. (Cuba)....10. *L. Curtyana*.

II. Leaf-margin denticulate; the under surface pubescent or glabrous but not showing the original folds of the leaf.

J. Branchlets and stems villous at maturity. (Jamaica)
.....11. *L. villosa*.

JJ. Branchlets and stems pubescent when very young, glabrescent at maturity.

K. Leaves chartaceous; petals glabrous or nearly so on the external surface; stamens 4-5-seriate; peduncles 2-5 mm. long. (Jamaica)
...12. *L. haematoxylon*.

KK. Leaves coriaceous; petals pubescent on the external surface; stamens 3-seriate; peduncles ca. 1 mm. long. (Cuba)...9. *L. Ekmani*.

BB. Ovary and fruit 6-10-celled. (Porto Rico)...13. *L. portoricensis*.

AA. Terminal leaf-buds glabrous. (Cuba).....5. *L. Wrightii*.

1. **Laplacea alpestris** (Krug & Urban) Dyer in Index Kew. Suppl. 2: 86. 1904. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136. 1925. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 16. 1931. — Moscoso, Cat. Fl. Doming. 1: 377. 1943.

Haemocharis alpestris Krug & Urban in Bot. Jahrb. 21: 547. 1896. — Urban, Fl. Ind. Occ. 8: 436. 1920.

Wikstroemia alpestris (Krug & Urban) Blake in Contrib. Gray Herb. n. s. 53: 38. 1918. — Urban, Fl. Ind. Occ. 8: 759. 1921.

Small tree 2-3 m. high. Terminal leaf-bud gray-sericeous. Young branchlets long-pilose, the older branchlets glabrescent, strigose. Leaves chartaceous, elliptic to elliptic-obovate, 2.5-4 cm. long, 1-1.5 cm. wide, obtuse, rarely rounded at the apex, long-tapering at the base, glabrous, dark green above, long-pilose and lighter green beneath, the margin quite flat, occasionally subrevolute, finely denticulate especially toward the apex, the midrib slightly canaliculate above, the veins 8-10 pairs, conspicuous above, very outstanding below forming a sharp network over the entire lower surface, the petiole 2-4 mm. long. Flowers few, solitary, in axils near the apex of the branchlets; peduncles very brief, ca. 2 mm. long; bracteoles quickly caducous; sepals ca. 5, broadly ovate to subrotund, the larger ones 5-6 mm. long, pilose on the external surface; petals 5, obovate, ca. 15 mm. long, 8-10 mm. wide, unequal, deeply emarginate at the apex, pubescent on the median portion of the external surface; stamens biseriate, the filaments glabrous, 4-5 mm. long, the anthers subglobose, ca.

1 mm. long; ovary ovate, white-pilose, 4–5-celled, with ca. 3 ovules in each cell, the styles 4–5, horizontal, ca. 1 mm. long, glabrous except at the extreme base, the stigmas considerably dilated, semiorbicular. Capsule oblong, ca. 10 mm. long, 4–5 mm. diam., very short-appressed-pubescent, 4–5-celled, 2–3 seeds in each cell; seeds with wing ca. 7–8 mm. long, 2 mm. wide.

HAITI: Morne des Commissaires, Gros Cheval, alt. 1500 m., *L. R. Holdridge 1260* (US), June 9, 1942 (tree 10 m. tall; petals white, ca. 2 cm. long, deeply emarginate; old capsules persistent). — Morne des Commissaires, alt. 5800 ft., *J. T. Curtis s.n.* (US), July 24, 1944. — Massif de la Pelle, Marigot, Jardins Bois-Pin, alt. 1800–1900 m., *E. L. Ekman H1622* (US), Aug. 24, 1924.

Laplacea alpestris was the first species of the genus described from the republics of Haiti and Santo Domingo. Since then two more species, *L. Samuelssonii* Schmidt and *L. cymatoneura* Urban, have been described. Upon studying the genus as a whole one is struck by the close relationship of these three species, and the study of further collections may show *L. cymatoneura* to be, at the most, only a variety of *L. alpestris*.

Distinctive characters of this species are: (1) the horizontal styles and broadened stigmas; (2) the long-pilose hairs on the under surface of the mature leaves; (3) the petals pubescent on the dorsal surface; and (4) the fine, extensive and pronounced reticulation on the under surface of the leaves.

Laplacea Samuelssonii can be separated from this species by the styles which are three in number and erect and by the stigmas which are somewhat capitate but not broadened. Also the pubescence when present on the under surface of the leaves is appressed, rather than loose-pilose and turns dark in color.

Laplacea cymatoneura possesses the five horizontal styles and broadened stigmas and the pronounced reticulation on the under surface of the leaf. However, this reticulation is confined more to the outer half of the leaf. The under surface of the leaf is quite glabrous, as is the dorsal surface of the petals.

Krug and Urban, in their original description of *L. alpestris* and Urban in the description of *L. cymatoneura* describe in detail staminate and pistillate flowers. In all the flowers I examined or dissected there was no instance of sexual distinction in the individual flowers.

2. *Laplacea cymatoneura* Urban in Fedde, Rep. Spec. Nov. Reg. Veg. 20: 34. 1924. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 16. 1931; 33: 176. 1933. — Moscoso, Cat. Fl. Doming. 1: 377. 1943.

Large forest tree. Terminal leaf-bud appressed-pubescent, the branchlets of the current year's growth appressed-pubescent, glabrous when mature, erect, brown, terete, lightly striate. Leaves coriaceous, obovate, 4–5 cm. long, 2–2.5 cm. wide, obtuse or rounded at the apex, emarginate, cuneate at the base into a petiole 4–5 mm. long, dark green, shining, glabrous

above, lighter green, glabrescent below, pilose especially along the midrib and margin when young, the margin subrevolute appearing crenulate on the upper surface but distinctly denticulate on the under surface, the midrib deeply canaliculate on the upper surface, broad and prominent beneath, the veins 8–10 pairs, obvious above, very distinct below, nearly horizontal with the midrib, anastomosing near the margin forming a sharply defined network of lesser veins. Flower solitary, axillary near the ends of the branchlets; peduncles ca. 8 mm. long, appressed-pubescent; bracteoles quickly caducous, the scars prominent on the peduncle; sepals unequal, subrotund, the outer sepals 5–6 mm. long, 6–7 mm. wide, the inner ones larger, up to 10 mm. long, 9 mm. wide, appressed-pubescent on the dorsal surface; petals obovate, glabrous, deeply emarginate, up to 23 mm. long, 13 mm. wide; stamens 2-seriate, the filaments 2.5–3 mm. long, glabrous, the anthers minute, less than 0.5 mm. long, globular; ovary ovoid, sericeous, 5-celled, the cells 3-ovulate, the styles 5, horizontal, glabrous, ca. 0.5 mm. long, the stigmas expanding considerably beyond the styles. Capsules narrow-elliptic, ca. 1.5 cm. long, the seeds ca. 3 mm. long with the wing ca. 7 mm. long.

DOMINICAN REPUBLIC: Prov. Pacificador, vicinity of San Francisco de Macorís, Quita Espuela, alt. 400–1000 m., *W. L. Abbot 2093* (US, ISOTYPE), April 5–17, 1922 (large forest tree). HAITI: Massif du Nord, Port-de-Paix, Haut-Piton, on laterite, alt. ca. 800 m., *E. L. Ekman H3688* (US), April 6, 1925.

This species was described by Urban (1924) from very fragmentary material and is consequently incomplete. He stated that he had seen only two leaves. Knowing the variations that are frequently found in this family, it is surprising that he separated the species from *L. alpestris* (to which it is obviously closely related) on the basis of such scanty material. Abbot's isotype in the U. S. National Museum is very similar to the material seen by Urban. It consists merely of a packet containing two leaves and a few petals, and on the sheet a piece of wood which evidently came from a very large tree, as is stated on the label.

Later, in 1933, O. C. Schmidt amplified the description by including the fruit and by citing two more specimens, *Ekman H3688* and *H4635*. *Ekman H3688* is represented in the U. S. National Herbarium. Before seeing Schmidt's work I had difficulty in identifying *Ekman H3688*, finally deciding to place it with *L. cymatoneura*, even though the petals measured only 11 or 12 mm. in length and the veins rose less horizontally from the midrib. In the two leaves of the type the veins are strikingly horizontal. In *Ekman H3688*, although the majority of the veins appear to rise subhorizontally to the midrib, many leaves show veins which leave the midrib at an angle of 60° or even 45°. It is quite probable that Abbot's few leaves may have been collected from a tree which exhibited the same variation in veining as *Ekman H3688*. I was pleased to find that Schmidt reached the same conclusion as I regarding the Ekman specimen, although in his added description he did not mention the variations recorded above.

In his mention of *Ekman H4635*, a specimen which I have not seen, he described only the fruit.

This species can be separated from *L. Samuelssonii* by the horizontal styles, which number five. In *L. Samuelssonii* the styles are three in number and erect, and the stigmas are capitate rather than broadened.

From *L. alpestris* the species can be separated at present by the larger (wider) leaves and their glabrous under surface and by the glabrous dorsal surface of the petals. The leaves of *L. alpestris*, even in maturity, are distinctly long-pilose below, and narrower, with an over-all reticulation. The petals are lightly pubescent on the dorsal surface. In most characters, however, these two species agree. However, since small petals (11 or 12 mm.) have been found in *Ekman H3688*, it may eventually be necessary, on the basis of additional material, to combine the two species, recognizing this one as a variety of *L. alpestris*.

3. *Laplacea Samuelssonii* O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 16. 1931. — Moscoso, Cat. Fl. Doming. 1: 377. 1943.

Small tree. Terminal leaf-bud and young branchlets of the current year densely appressed-pilose, the older branchlets terete, glabrous, brown-gray. Leaves chartaceous, oblanceolate or narrowly obovate, 2–4 cm. long, 1–1.5 cm. wide, narrowed at the apex, rounded, occasionally emarginate, cuneate at the base, elongate-tapering at the extreme base into a very short petiole 1 mm. long, glabrous above, sparsely appressed, very short pubescent below, darkening with age and appearing black in the dried state, the margin subrevolute, finely denticulate, the veins 10–12 pairs, rather inconspicuous above, prominent below, rising nearly horizontally from the midrib, anastomosing near the margin, forming a narrow network of veins. Flowers solitary, axillary near the ends of the branchlets; peduncles short, 1–1.5 mm. long; bracteoles quickly caducous; sepals unequal, suborbicular, 5–7 mm. long, 7–8 mm. wide, appressed-pubescent on the dorsal surface; petals 5, white (*Ekman*), obovate, ca. 12 mm. long, 8–10 mm. wide near the apex, emarginate, lightly appressed-pubescent in the median portion of the external surface; stamens apparently tri-seriate, the filaments glabrous, unequal, those of the outer row 3 mm. long and those of the inner row ca. 4 mm. long, the anthers subglobose, ca. 0.8 mm. long; ovary subglobose, densely sericeous, 6-angled (*Schmidt*), the styles 3, thick, ca. 0.6 mm. long, erect, glabrous. Fruit not known.

HAITI: Massif des Matheux, l'Arcahaie, Morne Delpech, alt. ca. 4000 m., *E. L. Ekman 9320* (US, ISOTYPE), Nov. 14, 1927.

Two mounted sheets of *Ekman 9320*, the type of the species, are deposited in the U. S. National Herbarium. One specimen has leaves up to 4 cm. long and 1.5 cm. wide, while on the second specimen all the leaves are much smaller, none measuring more than 2 cm. long and 0.8 cm. wide. In other characters there is complete agreement.

Distinctive characters are: (1) the sharp reticulate veining on the under surface of the leaf; (2) the short scattered appressed pubescence (eventu-

ally darkening) on the under surface of the leaf; (3) the three erect, short styles; and (4) the tri-seriate stamens.

The species is closely allied to *L. alpestris* (Krug & Urban) Dyer and to *L. cymatoneura* Urban. It can be distinguished from *L. alpestris* by the three erect, very short (0.6 mm.) styles. In *L. alpestris* the styles number ca. 5 and lie horizontal to the ovary, and the stigmas are pronouncedly dilated. The leaves are noticeably much longer pilose on the under surface of the leaf, especially along the midrib.

4. *Laplacea angustifolia* (Britton & Wilson) O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 22: 94. 1925. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 70, 75. 1944.

Haemocharis angustifolia Britton & Wilson in Bull. Torrey Bot. Club. 50: 43. 1923.

Tree 20–30 m. Terminal leaf-bud slender, appressed-pubescent. Young branchlets slender, grayish brown, terete, appressed-pubescent, the older branchlets glabrous. Leaves coriaceous or subcoriaceous, oblong-elliptic to linear-lanceolate, 3–4 cm. long, 0.6–0.8 cm. wide (also 5.5–6 cm. long and 1.3–1.4 cm. wide), acute at the apex, not sharply so, finely apiculate, tapering gradually at the base into a petiole 1 mm. long, glabrous above, the younger leaves covered underneath with a light spreading pubescence, at maturity pubescent on the midrib only, the margin entire, subrevolute, the veins ca. 12 pairs, lightly elevated on both surfaces, anastomosing near the margin. Flowers solitary, axillary near the apices of the branchlets; peduncles very short, terete, 1 mm. long, appressed-pubescent; bracteoles 2, sepaloid, broadly ovate, 2–3 mm. long, appressed-pubescent on the external surface; calyx-lobes 5, suborbicular, 4.5–6 mm. long, 4–6 mm. wide, appressed-pubescent on the external surface; petals 5, obovate, 1.5–1.7 cm. long, ca. 1.3 cm. wide, deeply emarginate at the apex, pubescent on the median portion of the external surface; stamens bi-seriate, ca. 30, the filaments quite equal, filiform, ca. 5 mm. long, glabrous, the anthers subglobular, 0.5 mm. or less long; ovary globose, densely white-villous, 5-celled, the styles 5, distinct, glabrous, ca. 1 mm. long. Fruit not seen.

CUBA: Oriente: Pico Turquino, Maestra Ridge, alt. 1300 m., *Fr. Leon 11072* (NY, TYPE), July 1922 (tree 20–30 m.). — Pico Turquino, slope of First Peak, *G. C. Bucher 77* (NY), Oct. 12–14, 1924.

The narrow oblong-elliptic leaves of this species are its most distinctive feature. Closely resembling these leaves in appearance are those of the narrower-leaved specimens of *L. Wrightii* Grisebach. The terminal leaf-buds of the latter species are glabrous, whereas in this species they are pubescent.

5. *Laplacea Wrightii* Grisebach in Mem. Amer. Acad. n. s. 8: 166 (Pl. Wright.). 1860. — Walpers, Repert. Bot. Syst. 7: 367. 1868. — Sauvalle, Fl. Cuba. 10. 1873. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136. 1925. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 17. 1931. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 70, 75. 1944.

Haemocharis Wrightii (Grisebach) Gomez de la Meza, Dicc. Bot. Nom. Vulg. Cub. Puerto Riq. 15. 1889; Ensayo Farm. Cuba 26. 1889; in Anal. Hist. Nat. Madrid 19: 222. 1890. — Urban in Bot. Jahrb. 21: 545. 1896.
Wikstroemia Wrightii (Grisebach) Blake in Contrib. Gray Herb. n. s. 53: 41. 1918.

Slender tree. Terminal buds small, glabrous on the external surface. Branchlets glabrous (current year's growth appressed-pubescent), terete. Leaves coriaceous, obovate to obovate-elliptic, 5–9 cm. long, 2–3 cm. wide, glabrous on both surfaces, obtuse or rounded at the apex, usually lightly emarginate, tapering at the base into a short petiole 2–3 mm. long, the margin entire or rarely minutely serrulate toward the apex, the veins 8–12 pairs, quite inconspicuous on both surfaces. Flowers solitary, axillary; peduncles glabrous, 4–6 mm. long, terete; bracteoles caducous; sepals 5, ovate to orbicular, ca. 10 mm. long, sericeous on the external surface, appressed-pilose on the internal surface, shortly apiculate at the apex; petals 5, obovate, white, 15–17 mm. long, ca. 10 mm. wide, appressed-pubescent on the external surface; stamens ca. 50, the filaments bi-seriate, the anthers ovate; ovary 5-celled, densely sericeous, oval, few-ovulate. Capsule ovoid, obtuse at the apex, 2–3 cm. long, glabrescent, 5-angled, 5-celled; seeds (including wing) 12–15 mm. long.

CUBA: Oriente: near Monte Verde, in forest, *C. Wright 48* (ISOTYPES, G, NY, Mo), Jan.-July 1859 and 1860–1864 (slender tree with white flowers). — South of Sierra Moa, Camp La Gloria, *J. A. Shafer 8195* (NY, US), 8203 (NY, US), Dec. 24–30, 1910 (slender shrub 5 ft. high with white flowers).

The distinguishing characters are: (1) glabrous terminal leaf-buds; (2) coriaceous leaves; (3) large fruit and seeds; and (4) sepals pubescent on both the external and internal surfaces. The glabrous terminal buds distinguish this species from all other Cuban species.

From the Sierra Moa region of Oriente are two specimens, *J. A. Shafer 8195* and 8203, which probably belong here but possess neither fruit nor mature flowers. The leaves are more narrow (sometimes only a single centimeter wide) and resemble *L. angustifolia*. However, in the latter species the terminal buds are distinctly pubescent. I do not believe that this Shafer material should be given varietal status even though the leaf difference seems distinctive. Too little material has been examined.

Six sheets of "*Wright 48*" have been examined in this study. It is very obvious that this group of specimens does not comprise a single collection. There are four different labels with this number, all from Oriente:

1. "prope villam *Monte Verde* dictam, Cuba Orientali, Jan.-Jul. 1859." This is printed on a blue label with a written number 48. A blue field label accompanies the printed label and states that the habit is that of a slender tree and that the flowers are white. The abbreviation "M. V. Dec. 8" on this field label agrees in locality (M. V. standing for Monte Verde) but the date "Dec. 8" does not agree with the printed label. A single specimen is found at the Gray Herbarium.

2. "1856-7, in Cuba Orientali." Another single specimen with a blue label in the Gray Herbarium. Besides the number "48" is also found the number "64" both on the label and in a packet at the top of the sheet.

3. "Sept. 1859-Jan. 1860." This is on a white label with no further information. There are two sheets of this collection in the herbaria of the New York Botanical Garden and the Missouri Botanical Garden.

4. "1860-64." On a white label, and found at Gray, Missouri, and New York. The Gray specimen possesses an added field label which states that the specimen was collected at Cachillas de Baracoa on May 14, and that it was arborescent with white flowers. However, the Gray and Missouri specimens possess very mature fruits with no flowers, while the New York specimen possesses a few unattached flower-buds.

Fortunately, since this "number 48" is the type of the species, these specimens all truly belong to the same species. However, until the species is re-collected we cannot be sure of the true type-locality.

6. *Laplacea benitoensis* (Britton & Wilson) O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 24: 78. 1927; 29: 16. 1931. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 70, 75. 1944.

Haemocharis benitoensis Britton & Wilson in Mem. Torrey Bot. Club 16: 82. 1920.

Straggling shrub 1-3 m. high. Terminal leaf-bud small, ca. 5 mm. long, villous. Branches slender, terete, the very young branchlets appressed-pubescent. Leaves coriaceous, obovate, 3-5 cm. long, 1-1.6 cm. wide, rounded at the apex, cuneate at the base, glabrous, light green above, loosely appressed-pubescent beneath, glabrescent, the margin entire, revolute, the veins few (ca. 8) in number, occasionally evident on both surfaces, usually not conspicuous, the petiole slender, 5-7 mm. long, pubescent in the younger leaves. Flowers solitary, axillary near the tips of the branchlets; bracteoles quickly caducous; sepals 5, small, suborbicular, 3-4 mm. long and wide, appressed-pubescent on the external surface; petals (fide Britton & Wilson) 5, white, elliptic-obovate, 10 mm. long, 5-6 mm. wide; stamens 2- or 3-seriate, glabrous, the filaments unequal, ca. 2 mm. long, the anthers globular, minute, ca. 0.25 mm. long; ovary subglobose, covered with a dense white-silver pubescence, glabrous at the apex and tapering broadly into an entire glabrous style which is topped by several stigmas. Fruit not seen.

CUBA: Oriente: vicinity of Camp San Benito, west of camp, in thicket, alt. 900 m., *J. A. Shafer 4063* (NY, TYPE), Feb. 24, 1910 (straggling shrub 4 ft. high; flowers white). — South of Sierra Moa, Camp La Gloria, *J. A. Shafer 8208* (Ch, NY, US), 8272 (G, NY), Dec. 24-30, 1910 (shrub 6-10 ft.).

A few of the outstanding characteristics of this species are: (1) the small calyx-lobes and corolla-lobes; (2) the small pubescent terminal leaf-buds; (3) the very short peduncles; (4) the entire revolute margins of the small thick leaves; (5) the very small stamens; and (6) the entire style.

Although six specimens were available for this study, none offered mature flowers for dissection. Fortunately, the type specimen (*J. A. Shafer 4063*), deposited in the New York Botanical Garden, possessed remnants of a partially dissected flower, and it was from this and the diagnosis of the original authors that the above description was drawn up.

7. *Laplacea Urbani* O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 22: 93. 1925; 29: 17. 1931. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 70, 75. 1944.

Small tree. Terminal leaf-buds elongate, conspicuously gray-appressed-pubescent. Branches brown-gray, terete, glabrous, conspicuously marked by leaf-scars, the very young branchlets short-appressed-pubescent, quickly glabrous. Leaves disposed at the ends of the branchlets, obovate, 6–10 cm. long, 2.5–4 cm. wide, rounded and deeply emarginate at the apex, tapering at the base, glabrous above, appressed-pubescent below (on the midribs only in mature leaves), the margin crenate, nearly undulate, the veins prominent on both surfaces, ca. 15 pairs, branching and anastomosing near the margin appearing reticulate, the upper pair arching back and terminating near the deepest point of emargination, the actual petiole short, 3–4 mm. long, pubescent below. Flowers solitary, axillary, the peduncle 10–12 mm. long, terete, pubescent with a number of scars along the side, the scars probably those of the caducous bracteoles; sepals 5, obovate to rounded, sericeous-pubescent on the external surface, unequal, the outer ones 7–8 mm. long and ca. 6 mm. wide, the inner ones 9–12 mm. long, 6–8 mm. wide; petals 5 (fide Urban), white, obovate, 2.3–2.5 cm. long, 1.5–1.7 cm. wide, deeply emarginate at the apex, pubescent on the dorsal surface; stamens many, 3 (or more)-seriate, the filaments glabrous, somewhat unequal, 7–10 mm. long, the anthers oblong-elliptic ca. 1 mm. long; ovary ovoid, sericeous-pubescent, 2.5–3 mm. long, 5-celled; styles 5, 1–1.5 mm. long, glabrous; stigmas 5. Fruit not seen.

CUBA: Oriente, Sierra Maestra, Pinar de Caridad, southeast of Yara, pine patch at edge of brook, *E. L. Ekman 14687* (NY, ISOTYPE), July 31, 1922.

This species is characterized by large leaves, 6–10 cm. long, 2.5–4 cm. wide, rounded and deeply emarginate at the apex. The margin is very outstanding for the genus in that it is softly crenulate, without any evidence of glands. The veining also is distinctive. Conspicuous on both surfaces, the veins join about half-way to the margin, becoming reticulate. The upper pair arch upward, then back again toward the midrib, and appear to join near the point of emargination, forming a nearly heart-shaped figure. The complete arc is not always obvious or truly formed.

The corolla is deeply emarginate. The stamens are more numerous than those found in most species and appear to be 3- or 4-seriate. Along the peduncle were found scars caused by caducous bracteoles, farther spaced, however, than is usual, scattered over the entire length of the peduncle.

Several characters are mentioned above with an element of uncertainty. Only a single, partially dissected flower was attached to the specimen. No

attempt at boiling up the flower or dissections was made. The description was drawn up from that of the original author and supplemented by observations on the type whenever possible.

7a. *Laplacea Urbani* O. C. Schmidt var. *subserrulata*, var. nov.

A typo recedit foliis margine subserrulatis vel leviter crenulatis et apice minus profunde emarginatis vel integris.

CUBA: Oriente: Firmesa to Gran Piedra, *J. A. Shafer 8974* (NY, US), Mar. 4-5, 1911 (shrub 8 ft.).—Range of Sierra Maestra, Loma del Gato, alt. 900-1000 m., *Fr. Leon, Clement & M. Roca 9858* (NY, TYPE), *10015* (NY), July 11-Aug. 14, 1921 (small tree 5-6 m.).—Cobre range of Sierra Maestra, Loma del Gato, *Fr. Leon, Clement & M. Roca 10125* (NY), July 11-Aug. 14, 1921 (shrub 4-5 m.).

The material cited above, like most of the earlier collections, has long been identified with *Laplacea Curtyana*, a species of western Cuba. Although it appears to resemble *L. Curtyana* in many respects, I feel that its true relationship is with one of the Oriente species, namely, *L. Urbani*. Any one of three species, *L. Urbani*, *L. Ekmani*, and *L. moaensis*, might well be the type from which this variety has derived. However, in *L. moaensis* the leaves have a tendency toward obliqueness and in *L. Ekmani* the leaves are coriaceous, both characters strong for any species of this group but lacking in this variety.

From typical *L. Urbani* the variety differs in the apex, margin, and venation of the leaf. Otherwise the two entities are very similar. At the apex of the leaf in the species a deep and very marked emargination is found, the margin is decidedly crenate, and the top pair of veins turn back to the midrib to form a heart-shaped figure. In the variety the apex of the leaf may be slightly emarginate or entire, the margin may be lightly crenulate, but usually is subserrulate, and the upper pair of veins do not turn back toward the midrib.

This variety differs nearly as much from the species as do *L. Urbani*, *L. Ekmani*, and *L. moaensis* from one another. Only four specimens were available for study of the three species listed above: two for *L. Ekmani* and one each for *L. Urbani* and *L. moaensis*. As many specimens were available for this variety alone.

8. *Laplacea moaensis* Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 72. 1944.

Tree 3-5 m. high. Terminal leaf-bud with a fulvous or silvery appressed pubescence. Branchlets terete, reddish brown, pubescent when young, soon becoming glabrous. Leaves disposed at the ends of the branchlets, chartaceous, obovate or oblanceolate, 6-12 cm. long, 2-3.5 cm. wide, obtuse and slightly emarginate at the apex, narrowed at the base, glabrous above, fulvous-pubescent beneath, especially on the lower portion of the prominent midrib, the margin subrevolute, lightly denticulate-crenulate along one side especially toward the apex, entire along the other side, the veins (20-30 pairs) inconspicuous, the petiole very short, ca. 2 mm. long. Flowers solitary, axillary; peduncle short, ca. 6 mm. long, with bracteole scars dis-

posed along the sides, appressed-pubescent; bracteoles quickly caducous (not seen); sepals subrotund, unequal, 8–10 mm. long, nearly as wide, appressed-pubescent over the entire external surface; petals (fide Marie-Victorin) white within, slightly purple without, 8–10 mm. long; stamens with the filaments (ca. 10 mm. long) gradually attenuated from the base to the apex; ovary subspherical, 3–4 mm. long, white-sericeous-pubescent, 4–5-celled. Capsule oblong-elliptic, 2.5–3 cm. long, 4–5-celled; seeds dark-colored, glabrous, ca. 6 mm. long, with wing about 18 mm. long.

CUBA: Oriente: "Region de Moa, chemin des hauteurs à l'ouest du rio Cayoguan, sur la limonite argileuse recouvrant la serpentine," Marie-Victorin, Clément & Alain 21630 (G, ISOTYPE), April 16–23, 1943.

Laplacea moaensis, the most recent species of the genus, has been amply described and illustrated by Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 69–75, figs 1 and 2, 1944. Although an isotype of the species was available for this study, no mature flowers or fruit were to be had for dissection; hence much of the above description was drawn from that of Marie-Victorin.

Coming from the serpentine region of Moa in the state of Oriente, like many other novelties from the same area it appears quite distinct. The peduncles are short (ca. 6 mm. long) and the bracteole-scars are found only along the upper half of the peduncle. The veins, although quite inconspicuous, are more numerous (20–30 pairs) than those in most other species of the genus. The margin is subrevolute. Along one side of the leaf the margin is entire, while along the other half a light crenulation can be found toward the apex. This margin condition, although not especially rare in the family, is distinctive for the genus.

A fine reddish dust from the serpentine region overlies most of the specimen, giving a brownish red color to the branchlets, midrib of the leaf, etc., and may be mistaken for a specific character. This dust can easily be wiped off with a cloth.

9. *Laplacea Ekmani* O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 22: 94. 1925; 29: 17. 1931. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 70; 75. 1944.

Small tree. Terminal leaf-bud silver-white sericeous-pubescent, ca. 6 mm. long. Young branchlets appressed-pubescent, glabrous when older. Leaves coriaceous, obovate, 4–8 cm. long, 2.3–3.5(–4.5) cm. wide, rounded at the apex, tapering at the base, glabrous above, appressed-pubescent on the midrib below, also occasionally under the revolute margin, inconspicuously denticulate with slight evidences of glandular teeth (on the upper denticulations), the veins inconspicuous on both surfaces, ca. 12 pairs, the petiole short, 4–5 mm. long. Flowers axillary, solitary; peduncle ca. 1 cm. long, terete, appressed-pubescent; bracteoles several, disposed along the peduncle, quickly caducous, broadly ovate to rounded, the outer ones ca. 7 mm. long, sericeous-pubescent on the exterior surface, gradating in size into the sepals; sepals ovate, ca. 10 mm. long, 6–7 mm. wide, sericeous-pubescent on the exterior surface; petals (bud) pubescent on the exterior

surface; stamens (bud) 3-seriate, the filaments glabrous, the anthers sub-globular; ovary (bud) subconical, densely silvery sericeous-pubescent, 5 (or 6)-celled, tapering at the apex into 5 (or 6) styles. Capsule oblong, 2.5–2.8 cm. long, glabrescent, 5 (or 6)-celled, each locule with ca. 5 seeds; seeds ca. 5 mm. long with the wing 10–12 mm. long.

CUBA: Oriente: Sierra de Nipa, Woodfred, in forest bordering on pinelands, on left side of Arroya del Medio, *E. L. Ekman 15283* (NY, ISO-TYPE), Sept. 25, 1922 (small tree). — Palmarito de Cauto, *A. Cuebelo 6230* (NY), June 2, 1932 (high tree).

This species was described from a fruiting specimen (*Ekman 15283*), a duplicate of which was available for this study. A second specimen (*Cuebelo 6230*), collected in the same general region as the type, possessed buds only, and these were very young. Dissections of the buds furnished only general information, but added somewhat to the original diagnosis of Schmidt.

The species appears to be most closely allied to *L. Urbani* Schmidt, differing mostly in the leaves, which are definitely coriaceous, not chartaceous as originally described. They are rounded at the apex and only rarely even slightly emarginate, not deeply so as is the case in *L. Urbani*. Also the leaf-margin is revolute, with hairs protruding from beneath the revolute portion of the margin. A very slight denticulation occurs along this margin. In *L. Urbani* the leaves are more nearly chartaceous, the margin distinctively crenate, and the pubescence on the mature leaves is confined to the midrib of the lower surface.

10. *Laplacea Curtyana* A. Richard, Ess. Fl. Cuba 1: (in Sagra, Hist. Ile Cuba 2:) 225. 1845. — Walpers, Repert. Bot. Syst. 5: 132. 1846. — Sauvalle, Fl. Cuba. 10. 1873. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136. 1925. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 17. 1931. — Marie-Victorin in Contrib. Inst. Bot. Univ. Montréal 49: 75. 1944.

Haemocharis Curtyana (A. Richard) Maza, Dicc. Bot. Nom. Vulg. Cub. Puerto-Riq. 15. 1889; Ens. Farm. Cuba 26. 1889; in Anal. Hist. Nat. Madrid 19: 222. 1890; in Estac. Exp. Agron. Cuba Bol. (Fl. Cuba) 22: 74. 1914. — Kuntze Rev. Gen. Pl. 1: 62. 1891, as *H. Courtyana*. — Urban in Bot. Jahrb. 21: 546. 1896. — Millspaugh in Field Columb. Mus., Bot. 1: 430. 1900.

Laplacea Courtyana Kuntze, Rev. Gen. Pl. 1: 62. 1891.

Wikstroemia Curtyana (A. Richard) Blake in Contrib. Gray Herb. n. s. 53: 39. 1918.

Tree up to 15 m. high. Terminal leaf-buds elongate, 1–1.5 cm. long, densely pubescent. Branches terete, pubescent when very young, later glabrous. Leaves coriaceous or subcoriaceous, elliptic to obovate, 6–8 cm. long, 2.3–3 cm. wide (occasionally up to 10 × 3.8 cm.), obtuse or subobtuse at the apex, tapering toward the base, glabrous and shining above (occasionally pubescent at base of midrib), pubescent below, glabrescent, the margin entire or subentire, the veins 12–15 pairs, curving upward near

the margin, the petiole short, 4–7 mm. long, pubescent. Flowers solitary; peduncle thick, terete, ca. 2 mm. long, pubescent; bracteoles 2, quickly caducous, when present unequal, the outer one smaller, broadly ovate, ca. 4 mm. long, 3.5 mm. wide, the inner one subrotund, ca. 5 mm. long and wide, both appressed-pubescent on the external surface; calyx-lobes 5, imbricate, very unequal in size and shape, outer lobes subrotund 6–8 mm. long, 6–7 mm. wide, the inner lobes increasing in both length and width, the innermost lobe broadly obovate to subrotund, ca. 18 mm. long, 10 mm. wide, with a wide membranaceous margin, very slightly emarginate, all appressed-pubescent on the dorsal surface; petals 5, unequal, the outer one obovate, the smallest 1.5 cm. long and 1.3 cm. wide, only slightly emarginate at the apex, the inner four more nearly equal, obovate to obcordate, ca. 2.2 cm. long and 1.5 cm. wide, deeply emarginate at the apex, all lightly pubescent on the external surface at least at point of emargination; stamens bi-seriate, ca. 40, the filaments of about equal length, free, glabrous, 5–6 mm. long, the anthers subglobose, ca. 1.5 mm. long; ovary semi-globose, densely white pubescent, 5-ribbed, 5-celled, tapering abruptly at the apex into fine short glabrous styles with 5 stigmas. Fruit woody ovoid, 5-ribbed, ca. 2 cm. long, 1 cm. wide, glabrous except within the ridges, the seeds with wings ca. 1.5 cm. long, the wing 9–10 mm. long.

CUBA: Isle of Pines: vicinity of Los Indios, arroya, *N. L. Britton, E. G. Britton & P. Wilson 14247* (Ch, G, Mo, NY, US), Feb. 13, 1916 (tree 15 m., flowers white).—No definite locality, *José Blain 22* (Ch). “Western Cuba”: “prope Vuelta de Abajo,” *C. Wright 2109* (G, Mo, NY, US), April 2, 1865.

Laplacea Curtyana is the first species described from Cuba and as such has been much confused and recorded over a range far too extensive. According to this study it is confined to the western part of Cuba and the Isle of Pines.

The species does not possess what might be termed truly outstanding characteristics. Some of the better characters to help in determination are: (1) the elongated, narrow, densely pubescent terminal leaf-bud; (2) the pubescence in waves (parallel to the margin) of density on the lower surface of the leaf; and (3) the entire or nearly entire margin of the leaf.

The specimens of *L. Curtyana* offered a good opportunity to observe the gradual change in form from the outer bracteole to the inner corolla-lobe. The inner calyx-lobe resembles very much the outer corolla-lobe. All the corolla-lobes except the outer one are deeply emarginate. The outer lobe is only slightly so.

Of the specimens cited above no locality was given on the sheet, *Wright 2109*. The quotation “prope Vuelta de Abajo” given in the citation above was taken from Urban’s publication.

11. *Laplacea villosa* (Macfadyen) Grisebach, Fl. Brit. W. Ind. 104. 1859. — Walpers, Repert. Bot. Syst. 7: 367. 1868. — Fawcett, Fl. Pl. Jamaica 3. 1893. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136.

1925. — Fawcett & Rendle, Fl. Jamaica 5(3): 188. 1926. — Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 16. 1931.

Gordonia villosa Macfadyen, Fl. Jamaica 1: 117. 1837. — Walpers, Repert. Bot. Syst. 1: 375. 1842.

Haemocharis villosa (Macfadyen) Choisy in Mém. Soc. Phys. Hist. Nat. Genève 1: 144 (Mém. Ternstr. 56). 1855. — O. Kuntze, Rev. Gen. Pl. 1: 62. 1891. — Urban in Bot. Jahrb. 21: 547. 1896.

Laplacea viscosa Hooker & Jackson, Index Kew. 2: 30. 1894, *lapsu*.

Wikstroemia Macfadyenii Blake in Contrib. Gray Herb. n. s. 53: 40. 1918.

Shrub 1.5–3 m. Terminal bud tawny-villous, the young branchlets terete, villous. Leaves coriaceous, pilose beneath, especially along the midrib, obovate, 7–10 cm. long, 3.5–5 cm. wide, obtuse or rounded at the apex, occasionally very short and bluntly acuminate, broadly cuneate at the base, appearing subauriculate, the margin revolute and crenulate, the midrib canaliculate above, raised below, widening toward the base, the veins 8–10 pairs, rather unobtrusive, the petiole thick, 1–3 mm. long, densely pilose on the under surface. Flowers solitary in the upper axils of the leaves; peduncles stout, 5–8 mm. long, pilose; bracteoles quickly caducous; sepals 5, imbricate, deeply concave, rounded, ca. 1.5 cm. long, 1.0–1.7 cm. wide, villous-sericeous, deciduous; petals 5⁺, obovate, 17–20 mm. long, 10–12 mm. wide, emarginate, pubescent on the external surface; stamens very numerous, pluri-seriate, the filaments unequal, up to 9 mm. long, the anthers oval, 2–2.5 mm. long; ovary villous-sericeous, 5-celled, the loculi 6–7-ovulate, the styles 5, glabrous, ca. 1 mm. or less long. Capsule subligeous, oblong, 2–2.5 cm. long, 1 cm. diam., obtuse, 5-angled at the apex, the seeds “5 in each cell.”

JAMAICA: Newhouse Gap, *J. Hart* 987 (NY, US), 1886. — Locality indefinite, *J. Hart* 351 (US). — Locality indefinite, *Macfadyen s. n.* (G).

This second species from Jamaica, although quite distinct from *L. haematoxylon* (Swartz) G. Don, has been less collected and is not known as well. A comparison of the two species can be found under the latter.

The size of the petals is probably recorded for the first time above. The dissection from boiled material shows them to be considerably smaller than those of *L. haematoxylon* and much less showy.

12. *Laplacea haematoxylon* (Swartz) G. Don, Gen. Syst. 1: 569. 1840. — Grisebach, Fl. Brit. W. Indies, 104. 1859. — Fawcett, Fl. Pl. Jamaica 3. 1893. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136. 1925. — Fawcett & Rendle, Fl. Jamaica 5(3): 188, *fig.* 72. 1926. — Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 17. 1931.

Gordonia haematoxylon Swartz, Fl. Ind. Occ. 2: 1199. 1800. — Lunan, Hort. Jam. 1: 461. 1814. — DeCandolle, Prodr. 1: 528. 1824. — Macfadyen, Fl. Jamaica 116. 1837.

Haemocharis haematoxylon (Swartz) Choisy in Mém. Soc. Phys. Hist. Nat. Genève 1: 144 (Mém. Ternstr. 56). 1855. — O. Kuntze, Rev. Gen. Pl. 1: 62. 1891. — Szyszyłowicz in Nat. Pflanzenfam. III. 6: 185. 1893. — Urban in Bot. Jahrb. 21: 546. 1896.

Wikstroemia haematoxylon (Swartz) Blake in Contrib. Gray Herb. n. s. 53: 40. 1918.

Tree 10–15 m. high. Terminal buds hirsute. Young branchlets pubescent. Leaves membranaceous to subcoriaceous, ovate to elliptic, 5–10 cm. long, 2.5–4 cm. wide, obtuse or obtusely acuminate at the apex, narrowed at the base into a petiole 4–8 mm. long, the margin serrate or crenate-serrate, especially along the upper half, generally glabrescent with inconspicuous hairs along the under side of the petiole and the midrib, the veins rather obscure, 10–12 pairs. Flowers large, solitary in the upper axils, white, ca. 4–6 cm. in diameter when open, ca. 0.6 cm. in diam. in bud; peduncles stout, 2–5 mm. long, puberulent; bracteoles apparently 2, quickly caducous, sepaloid; sepals 5, imbricate, rounded, concave, lightly puberulous on the outer surface, unequal, varying in size from bracteoles to petals, ca. 1 cm. long, 1.2 cm. wide, the margin scarious; petals 5–8, white, obovate, unequal, 2–3 cm. long, varying in width 1–2 cm. on the same flower, the wider petals deeply emarginate, the narrow petals often entire at the apex, subglabrous; stamens apparently 4- or 5-seriate, the filaments glabrous, unequal, the outer row ca. 5 mm. long, connate for various short distances at the base, very rarely joined the entire length, the inner filaments ca. 9 mm. long, not joined, the anthers subrotund, ca. 1 mm. across; ovary globose, hirsute, 5-celled, few-ovulate, styles 5, glabrous, very short, 1 mm. or less long, channeled, spreading at the apex into the stigmas. Capsule woody, oblong, subpentagonal, pubescent, ca. 2 cm. long, 1 cm. or less in diameter, the seeds ca. 3 in each cell, the wing and seed 8–12 mm. long.

JAMAICA: eastern slope of John Crow Mts., woodlands, alt. 520 m., *N. L. Britton 4162* (NY), Mar. 9–11, 1909 (tree 12 m. high; petals white). — Vinegar Hill, alt. 1100 m., *W. Harris 5493* (Ch, NY, US), Nov. 21, 1894 (tree 15 ft. high). — Near Woodcutters Gap, alt. 1450 m., *W. Harris 6736* (A, Ch, US), Nov. 6, 1896 (tree 5 m. high). — Hardware Gap, alt. 1350 m., *W. Harris 10124* (Ch, NY, US), Feb. 19, 1908 (tree 50 ft. high; flowers white). — Tom's River Wood, Upper Clarendon, alt. 800 m., *W. Harris 10852* (Ch, NY, US), Mar. 1, 1910 (tree 40 ft. high; flowers white). — John Crow Mts., alt. 600 m., *W. Harris & N. L. Britton 10763* (Ch, NY, US), Mar. 10, 1909 (tree 36 ft. high; corolla pure white). — Blue Mts., Marces Gap, alt. 1650 m., *J. R. Perkins 1469* (G), Mar. 31, 1916. — Blue Mts. near Marces Gap, alt. 1600 m., *A. Rehder s. n.* (A), Feb. 10, 1903. — Marces Gap, *F. Shreve s. n.* (NY), Feb. 7, 1906. — Indefinite locality, *J. Hart 609* (Ch, US), 1886.

Described under *Gordonia* in 1800, this is the oldest species in the genus. It was referred to *Laplacea* by G. Don in 1840.

Some of the salient characters of the species are: (1) large white flowers, 4–6 cm. across, the petals glabrous or nearly so, the wider petals emarginate at the apex and the narrower petals entire, and (2) the leaves ovate or elliptic, 5–10 cm. long, quite glabrous beneath with occasional scattered pubescence along the lower midrib.

A closely related species, also from Jamaica, is *L. villosa*. The latter species is characterized by a villous pubescence on most of the parts (branchlets, lower surface of the leaves, pedicel, calyx-lobes, and external surface of the corolla). The leaves are obovate, rounded or bluntly acuminate at the apex, and broadly cuneate at the base, appearing subauriculate.

13. *Laplacea portoricensis* (Krug & Urban) Dyer in Index Kew. Suppl. 2: 86. 1904. — Melchior in Nat. Pflanzenfam. ed. 2, 21: 136. 1925. — O. C. Schmidt in Fedde, Rep. Spec. Nov. Reg. Veg. 29: 17. 1931.

Haemocharis portoricensis Krug & Urban in Bot. Jahrb. 21: 548. 1896. — Urban, Fl. Ind. Occ. 4: 411. 1910. — Britton & Wilson, Sci. Surv. Porto Rico & Virgin Isl. 5: 582. 1924. — L. R. Holdridge in U. S. D. A. For. Serv. Occ. Pap. (Trees Puerto Rico 2) 2: 53, fig. 1942.

Wikstroemia portoricensis (Krug & Urban) Blake in Contrib. Gray Herb. n. s. 53: 40. 1918.

Tree 5–20 m. high with gray, fissured bark. Terminal leaf-bud appressed-pubescent, elongate. Younger branchlets finely appressed-pubescent, the older branchlets becoming glabrous. Leaves chartaceous or subchartaceous, elliptic to obovate, 5–12 cm. long, 2.5–4.5 cm. wide, obtuse to rounded at the apex, occasionally slightly emarginate, long-tapering at the base, glabrous above, glabrescent (rarely appressed-pubescent) below, the margin crenulate along the upper half, entire along the lower portion, the midrib canaliculate above, the veins 15–20 pairs, rather inconspicuous above, prominent below, anastomosing near the margin and becoming reticulate, the petiole 2–5 mm. long. Flowers solitary near the apex, axillary; peduncle short, 1–4 mm. long, appressed-pubescent; bracteoles quickly caducous; sepals unequal, the larger or inner sepals suborbicular, 10–12 mm. long, sericeous on the external surface; petals 6–9, white, obovate, unequal, 18–22 mm. long, 15–18 mm. wide, some deeply emarginate at the apex, others rounded, glabrous on the external surface, the outer petals thickened in the medial area; stamens 3–4-seriate, many (over 100), the filaments glabrous, unequal, 5–7 mm. long, the anthers ovate to subglobose, ca. 1 mm. long; ovary globose, white-tomentose, 6–10-celled, tapering at the apex into the 5 or more glabrous styles, the stigmas recurved, reniform. Capsule woody, narrow-ovate, 15–25 mm. long, ca. 10 mm. diam., short-appressed-pubescent to glabrescent, 6–10-celled; seeds 4 or 5 in each cell, 10–13 mm. long with wings.

PORTO RICO: El Yunque, *F. H. Sargent* 541 (US), July 4, 1938 (tree). — Catalina-Yunque Trail, Luquillo Mts., in forest, alt. 600–850 m., *N. L. Britton & E. M. Bruner* 7579 (NY, US), 7604 (NY), Feb. 23–26, 1923 (tree 10 m. high; petals white, fugacious). — Jajoma Alta, *W. E. Hess* 5591 (NY), Dec. 3, 1913. — Sierra de Naguabo, Loma Icaico, edge of woods, alt. 210–675 m., *J. A. Shafer* 3426 (NY, US), July 24, 1914 (tree 30 ft. high; corolla white). — Sierra de Naguabo, Rio Icaico and adjacent hills, forest, alt. 465–720 m., *J. A. Shafer* 3517 (G, Mo, NY, US), July 30–Aug. 5, 1914 (tree 25 ft. high). — Sierra de Naguabo, Barrio de Maizales, mountain forest, alt. 900 m., *N. L. Britton & W. E. Hess* 2277 (Ch, G, NY, US), March

9, 1914 (tree 15 m. high; flowers white, 4 cm. wide). — Sierra de Luquillo, Jimenez, in mountain forest, *P. Sintenis* 1326 (Ch, G, Mo, NY, US), May 26, 1885. — Sierra de Naguabo, in primary forest, *P. Sintenis* 5318 (Ch, G, Mo, NY, US), Nov. 5, 1886. — Coco Valley, Maricao Verde, *L. E. Gregory* 57 (NY), Aug. 2, 1940 (tree 14 ft. high). — Indefinite locality, *A. A. Heller s. n.* (Ch, NY), 1910.

Of the above cited specimens, *Sintenis* 1326 and 5318 and *Heller s. n.* were cited by Krug & Urban in the original publication of this species. No specimen was designated as the type. Krug & Urban carefully distinguished between pistillate and staminate flowers. I sought both types but was unsuccessful in finding any that could be designated as either pistillate or staminate. The flowers dissected for this study possessed not only developed ovary, style, and stigma, but also anthers (over 100) which had produced pollen. Krug & Urban state that in the staminate flowers the stamens were 3–4-seriate, the filaments 5–7 mm. long, the styles 1.5 mm. long, and the stigmas scarcely evolute. The pistillate flowers were described as having filaments 4 mm. long and the anthers without pollen. The styles were designated as 2.5–3 mm. long, and the stigmas as reniform, recurved. The individual flowers which I examined possessed all the fertile characters listed by these authors.

Some of the distinctive characters of this species are: (1) the pubescent terminal leaf-bud; (2) chartaceous leaves with prominent veins (15–20 pairs) underneath, which anastomose near the margin and form a conspicuous network near the margin; (3) the 6–10-celled ovary and fruit with 5 or 6 styles; (4) glabrous petals, emarginate or obtuse at the apex, thickened at the median portion; and (5) the very numerous stamens 3–4-seriate. Another leaf-character, usually present, which is distinctive, is a pair of lines midway between the midrib and the margin and somewhat parallel to the margins of the leaves. This probably is caused by the folds of the leaf in the bud. In some species of other genera of the Theaceae, especially in species with a noticeable pubescence on the under surface, this character is more pronounced because of a heavier growth of pubescence along this line. Other species exhibit more than a single pair of lines.

According to L. R. Holdridge (loc. cit.) this species is restricted to the eastern mountains of Porto Rico above 300 m. in elevation. So far as is known, *L. portoricensis* is the sole representative of the genus in Porto Rico. Vernacular names are *Maricao verde* and *Maricao*.

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